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600 Technology Park Drive  
Billerica, MA 01821-4130

# **Quad Serial PMC Module** ***Supplement***

**NORTEL**  
**NETWORKS™**

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The quad serial PMC provides connectivity over the WAN. The quad serial interface supports four full-duplex synchronous (HDLC), asynchronous, and bisynchronous serial ports.

In this guide, the Passport\* 5430 Multiservice Access Switch is referred to as the Passport 5430.

## Before You Begin

This guide is intended for qualified service personnel who are installing the Passport 5430 for the first time or who need to install or replace any Passport 5430 customer-replaceable unit (CRU). A qualified service person should have appropriate technical training and experience and be aware of the hazards involved in installing and replacing CRUs.

Before installing the quad serial PMC module into the Passport 5430, make sure that all network wiring has been installed on the premises using standard cable-system practices.

Before turning on the Passport 5430 for the first time, contact your network administrator to determine which software configuration option to use.



**Note:** The Passport 5430 Quad Serial PMC Module can be installed only on the expansion card (Part No. DU0004001).

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## Text Conventions

This guide uses the following text conventions:

**bold text**

Indicates command names and options and text that you need to enter.

Example: Enter **show ip {alerts | routes}**.

Example: Use the **dinfo** command.

*italic text*

Indicates new terms, book titles, and variables in command syntax descriptions. Where a variable is two or more words, the words are connected by an underscore.

Example: If the command syntax is:

**show at** <*valid\_route*>

*valid\_route* is one variable and you substitute one value for it.

## Acronyms

This guide uses the following acronyms:

CRU

customer-replaceable unit

IP

Internet Protocol

PCI

peripheral component interconnect

PMC

PCI mezzanine card

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From the Technical Support page, you can open a Customer Service Request online or find the telephone number for the nearest Technical Solutions Center. If you are not connected to the Internet, you can call 1-800-4NORTEL (1-800-466-7835) to learn the telephone number for the nearest Technical Solutions Center.

An Express Routing Code (ERC) is available for many Nortel Networks products and services. When you use an ERC, your call is routed to a technical support person who specializes in supporting that product or service. To locate an ERC for your product or service, go to the <http://www.nortelnetworks.com/help/contact/erc/index.html> URL.





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# Chapter 1

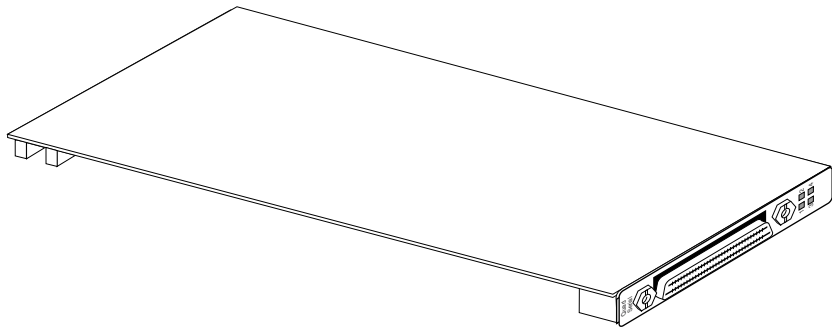
## Using the Quad Serial PMC Module

This document supplements *Installing and Operating the Passport 5430 Multiservice Access Switch*. Follow the hardware installation steps in that manual, then refer to this document for information specific to the quad serial PMC module.



**Warning:** The quad serial module is designed to operate in the Passport 5430 Multiservice Access Switch only. Attempting to use the quad serial PMC module in any other product may be hazardous and invalidates the regulatory approval.

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**Figure 1-1. Quad Serial PMC Module**

# Verifying Passport 5430 Requirements

Table 1-1 shows the programmable read-only memory (PROM) boot and diagnostic code required to use the quad serial.

**Table 1-1. Diagnostic and Boot Code for the Quad Serial PMC Module**

Code Type	Version	Directory	File Name
Boot	15.4.2.0	<i>fbr_proms</i>	<i>pp5430boot.exe</i>
Diagnostic	1.16	<i>diag.a</i>	<i>pmc_0060.a</i> <i>qscop_ram-ere 1.00</i> <i>scop_rom.exe 1.00</i> <i>pp5430_ram.exe ver 1.5</i>

The .exe files are found in the flash card.



**Note:** The version numbers of the boot and diagnostic code for your Passport 5430 must match the version numbers shown in Table 1-1. If the code versions of your switch are earlier than these, you must upgrade the PROM code. Failure to do so may cause the Passport 5430 to not operate correctly. For information about verifying, and upgrading PROM code, see the BayRS\* *Upgrading Routers* guide.

## Installing the Quad Serial PMC Module

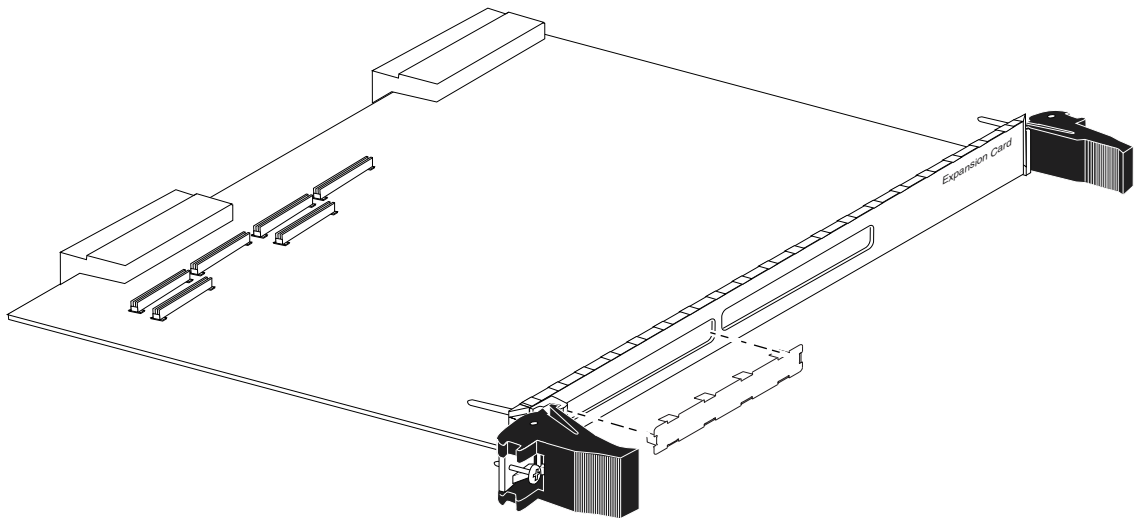
To install a PMC module on the expansion card:

1. **Attach an antistatic wrist strap, one end of the strap to your wrist and the other end to the router chassis.**



**Caution:** Electrostatic discharge can damage hardware. You must wear the antistatic wrist strap whenever you handle printed circuit boards. The strap directs static electricity from your body to the router chassis, preventing discharge to sensitive electronic components. You receive an antistatic wrist strap with the system processor module. See the instructions included with the wrist strap.

2. **If the expansion card slot contains a filler panel, push it out from behind the card bezel (Figure 1-2).**

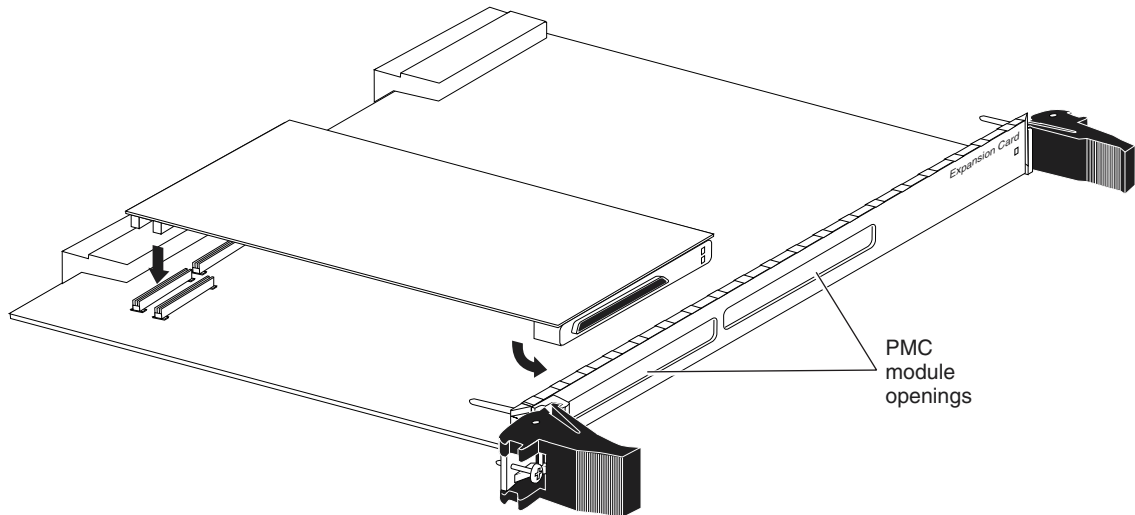


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**Figure 1-2. Removing the PMC Module Filler Panel**

- 3. Holding the quad serial PMC module with the connectors facing down, slide it into the opening on the expansion card (Figure 1-3).**

4. **Press down to seat the PMC module firmly into the sockets (Figure 1-3). Make sure the gasket on the faceplate is properly inserted.**

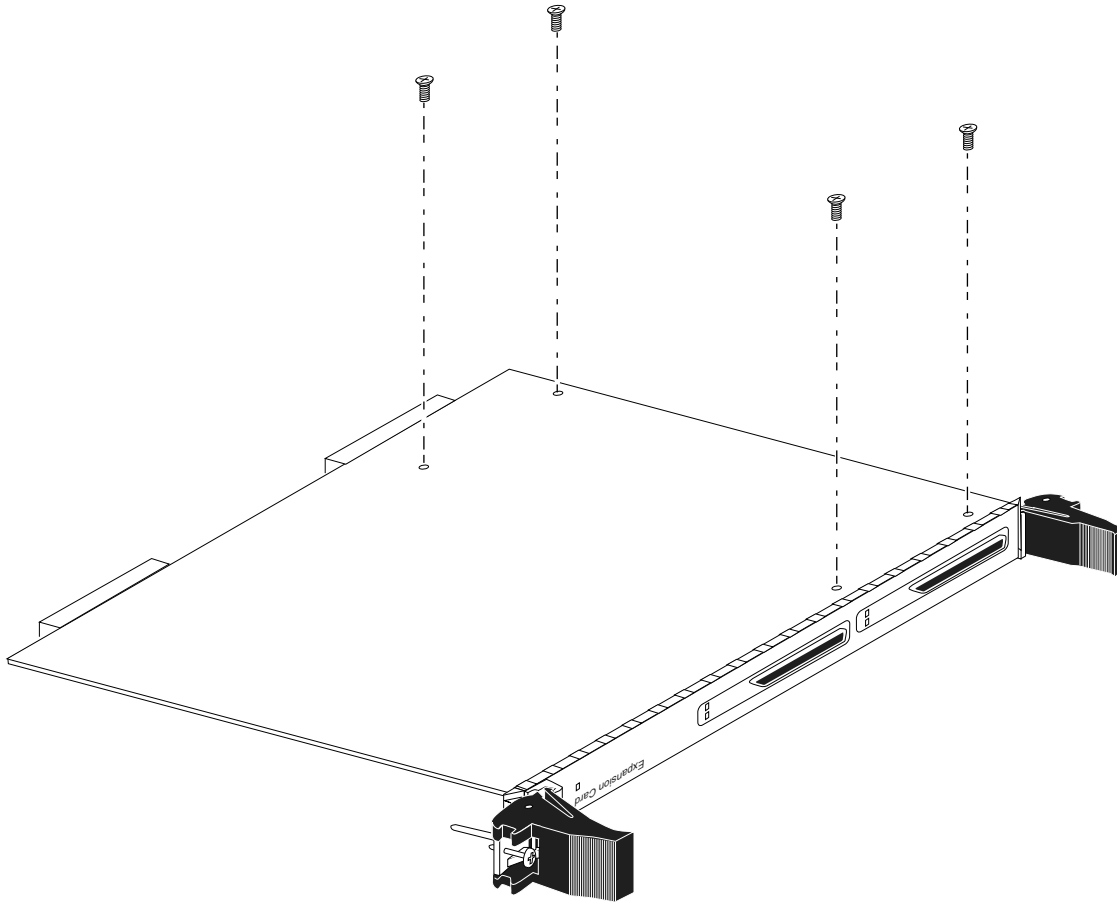


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**Figure 1-3. Installing the Quad Serial PMC Module**

5. **Flip the expansion card upside down so that the side with the expansion card is facing down (Figure 1-4).**

6. **Insert and tighten the screws to secure the PMC module to the expansion card (Figure 1-4).**



FBR0007

**Figure 1-4. Securing the PMC Module to the Expansion Card**

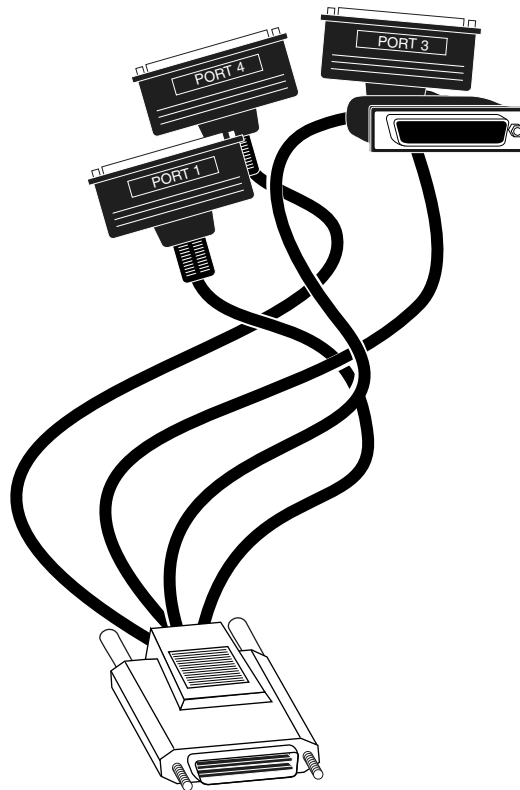
7. **Install the expansion card into the chassis.**

For instructions, see *Installing an Expansion Card in the Passport 5430 Multiservice Access Switch*.

## Attaching Cables

This quad serial interface supports multiple WAN protocols at a maximum transmission rate of 2 Mbps. This section describes how you connect a cable to the 120-pin interface on the installed adapter module. See Appendix A for more cable and interface information.

To connect up to four 44-pin serial cables to the 5430 quad serial PMC module, you must first connect a 120-pin to quad 44-pin adapter assembly (P/N 311158-A, Order No. DU0011009) (Figure 1-5). This cable ships with the module.



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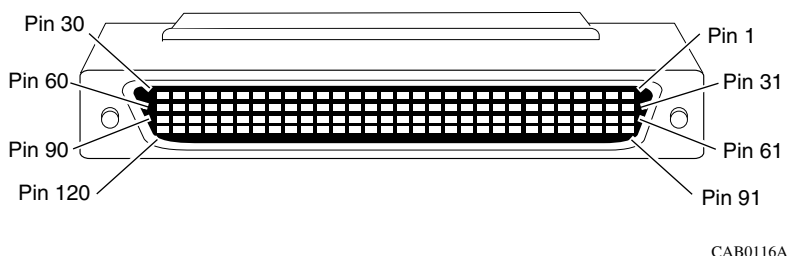
**Figure 1-5. 120-pin to Quad 44-pin Adapter Assembly**

For more information about which 44-pin serial cable to use, see “Cabling” on page A-1.

To connect the serial interface cable to the quad serial interface:

1. **Connect the 120-pin portion of the 120-pin to quad 44-pin adapter (Figure 1-6).**

This quad serial adapter cable is required to connect up to four 44-pin cables to the quad serial PMC modules.



**Figure 1-6. Quad Serial PMC Module Cable Connection**

2. **Secure the quad serial adapter cable to the interface PMC module using the captive screws on the cable.**

The screws should be tightened completely.

3. **Locate the serial interface cables and connect one to each end of the quad serial adapter cable. Make sure the screws are tightened completely.**

The serial interfaces automatically configure the desired electrical interface when used with standard keyed cables.

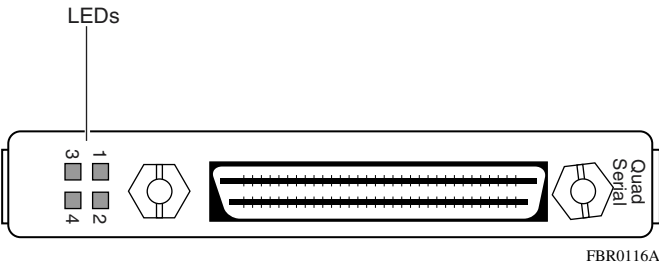
4. **Arrange the cable in the cable loom.**

For instructions, see “Using the Cable Looms to Manage Cables” in *Installing and Operating the Passport 5430 Multiservice Access Switch*.

5. **Connect the remote end of each cable to the appropriate communications equipment.**

# Interpreting LEDs

The quad serial PMC module has four green LEDs to indicate the status of the individual ports (Figure 1-7).



**Figure 1-7. Quad Serial PMC Module LEDs**

When an LED is lit, the associated port is active. When the LED is not lit, the associated port is inactive.

When you power up the Passport 5430, the LEDs will blink in a counter clockwise pattern. This indicates the onboard processor has completed and is waiting for boot and diagnostic commands from the Passport 5430 host.

## Completing Software Configuration

Once you have successfully installed the quad serial PMC module, complete the following software configuration tasks using instructions found in the documentation:

Configuration Task	Location of Instructions
If this is a first time installation, you must quick-start your Passport 5430.	<i>Installing and Operating the Passport 5430 Multiservice Access Switch</i>
Modify the Passport 5430 configuration file to add the quad serial PMC module and enable default quad serial PMC module software services.	<ul style="list-style-type: none"><li>• <i>Configuring and Managing Routers with Site Manager</i></li><li>• <i>Using the Bay Command Console (BCC)</i></li><li>• <i>Configuring TDM Services</i></li></ul>





**Note:** Adding software for the quad serial PMC module may increase the router's memory requirements beyond its current capacity. If the Passport 5430 experiences a memory problem, see the section "Memory or Buffer Problem" in *Troubleshooting Routers*. For information about changing the router image, see *Configuring and Managing Routers with Site Manager*.

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For the latest information, be sure to review the release notes and documentation change notice for your version of BayRS software.



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# Appendix A

## Cables and Interface Specifications

### Cabling

The quad serial interface supports four serial ports. Each serial port is an independent asynchronous/synchronous communication port capable of operating at speeds up to 2 Mbps. With the appropriate cabling, each port can operate in either a DTE or DCE configuration while supporting the following interfaces:

- EIA-449
- EIA-530
- V.28
- V.35
- RS-232
- X.21

The cables listed in Table A-1 are designed to support these interfaces.



**Note:** Old synchronous cables will not work properly with the quad serial card.

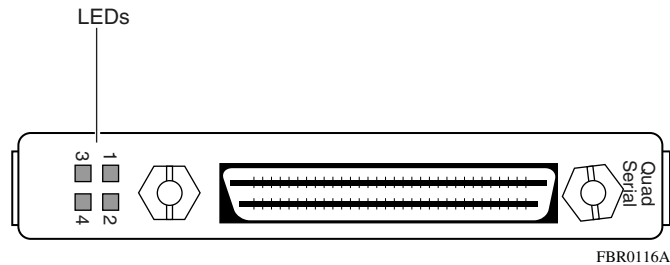
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**Table A-1. Quad Serial PMC Cable Requirements**

Cable	Description	Part No.	Model No.
EIA-232 DTE cable (standard)	Straight-thru 44-Pin male to DB-25 male	311137-A	AA0018049
EIA-232 DCE cable	Crossover 44-pin male to DB-25 female	311128-A	AA0018041
RS-422 DTE cable	Straight-thru 44-Pin male to DB-37 male	311140-A	AA0018052
RS-422 DCE cable	Crossover 44-Pin male to DB-37 female	311129-A	AA0018042
EIA-530 DTE cable	Straight-thru 44-Pin male to DB-25 male	311144-A	AA0018054
EIA-530 DCE cable	Crossover 44-Pin male to DB-25 female	311130-A	AA0018043
V.28 DTE cable	Straight-thru 44-Pin male to DB-25 male	311147-A	AA0018057
V.28 DCE cable	Crossover 44-pin male to DB-25 female	311131-A	AA0018044
V.35 DTE cable	Straight-thru 44-pin male to 34-pin male	311150-A	AA0018060
V.35 DCE cable	Crossover 44-pin male to 34-pin female	311132-A	AA0018045
X.21 DTE cable	Straight-thru 44-pin male to 15-pin or DB-15 male	311153-A	AA0018063
X.21 DCE cable	Crossover 44-pin male to 15-pin or DB-15 female	311133-A	AA0018046

## Serial Interface Pin Assignments

You can connect four 44-pin cables to each quad serial PMC module. This requires the use of a 120-pin to quad 44-pin adapter cable.



**Figure A-1. Quad Serial PMC Module Interface**

The following tables show the signal and pin assignment for Ports 1, 2, 3, and 4.



**Caution:** The following data is intended for informational use only. Due to the complexity of this assembly, Nortel Networks does not recommend construction of this adapter assembly by the end user. Incorrect wiring may cause damage to the quad serial PMC module. Use only Nortel Networks approved cables.

Table A-2 shows the signal and pin assignments for Port 1.

**Table A-2. Signal and Pin Assignments for Port 1**

120-pin QSerial Connector		44 Pin Conn Port 1	
Signal	Pin	Pin	Signal
FGND	16	1	FGND
PORT1_TXD+	8	2	SD+
		38	VSD+
PORT1_TXD-	7	16	SD-
		36	VSD-
PORT1_RXD+	35	17	RD-
		37	VRD-
SGND	3	7	SGND
SGND	9		
SGND	13		
SGND	34	43	SGND
PORT1_RT+	2	11	RT+
		34	VRT+
PORT1_RT-	1	25	RT-
		33	VRT-
PRT1_TT_DCE+	4	10	ST+
		32	VST+
PRT1_TT_DCE-	5	24	ST-
		31	VST-
PRT1_TT_DTE+	33	12	TT+
		40	VTT+
PRT1_TT_DTE-	32	26	TT-
		39	VTT-
PORT1_DTR+	41	8	DTR+
PORT1_DTR-	42	22	DTR-
PORT1_DSR+	39	6	DSR+
PORT1_DSR-	38	20	DSR-

(continued)

**Table A-2. Signal and Pin Assignments for Port 1** *(continued)*

120-pin QSerial Connector		44 Pin Conn Port 1	
Signal	Pin	Pin	Signal
PORT1_DCD+	43	9	DCD+
PORT1_DCD-	44	23	DCD-
PORT1_RTS+	14	4	RTS+
PORT1_RTS-	15	18	RTS-
PORT1_CTS+	10	5	CTS+
PORT1_CTS-	11	19	CTS-
PORT1_CMD	12	27	CMD
PRT1_MODE1	31	41	MODE1
PRT1_MODE2	6	42	MODE2
PRT1_MODE3	37	21	MODE3
SGND	40	44	SGND

Table A-3 shows the signal and pin assignment for Port 2.

**Table A-3. Signal and Pin Assignments for Port 2**

120-pin QSerial Connector		44 Pin Conn Port 2	
Signal	Pin	Pin	Signal
FGND	76	1	FGND
PORT2_TXD+	68	2	SD+
		38	VSD+
PORT2_TXD-	67	16	SD-
		36	VSD-
PORT2_RXD+	95	3	RD+
		37	VRD+
PORT2_RXD-	96	17	RD-
		35	VRD-
SGND	63	7	SGND
SGND	69		

*(continued)*

**Table A-3. Signal and Pin Assignments for Port 2** *(continued)*

120-pin QSerial Connector		44 Pin Conn Port 2	
Signal	Pin	Pin	Signal
SGND	73	43	SGND
SGND	94		
PORT2_RT+	62	11	RT+
		34	VRT+
PORT2_RT-	61	25	RT-
		33	VRT-
PRT2_TT_DCE+	64	10	ST+
		32	VST+
PRT2_TT_DCE-	65	24	ST-
		31	VST-
PRT2_TT_DTE+	93	12	TT+
		40	VTT+
PRT2_TT_DTE-	92	26	TT-
		39	VTT-
PORT2_DTR+	101	8	DTR+
PORT2_DTR-	102	22	DTR-
PORT2_DSR+	99	6	DSR+
PORT2_DSR-	98	20	DSR-
PORT2_DCD+	103	9	DCD+
PORT2_DCD-	104	23	DCD-
PORT2_RTS+	74	4	RTS+
PORT2_RTS-	75	18	RTS-
PORT2_CTS+	70	5	CTS+
PORT2_CTS-	71	19	CTS-
PORT2_CMD	72	27	CMD
PRT2_MODE1	91	41	MODE1
PRT2_MODE2	66	42	MODE2
PRT2_MODE3	97	21	MODE3
SGND	100	44	SGND



Table A-4 shows the signal and pin assignment for Port 3.

**Table A-4. Signal and Pin Assignments for Port 3**

120-pin QSerial Connector		44 Pin Conn Port 3	
Signal	Pin	Pin	Signal
FGND	60	1	FGND
PORT3_TXD+	24	2	SD+
		38	VSD+
PORT3_TXD-	23	16	SD-
		36	VSD-
PORT3_RXD+	49	3	RD+
		37	VRD+
PORT3_RXD-	50	17	RD-
		35	VRD-
SGND	19	7	SGND
SGND	25		
SGND	29	43	SGND
SGND	48		
PORT3_RT+	18	11	RT+
		34	VRT+
PORT3_RT-	17	25	RT-
		33	VRT-
PRT3_TT_DCE+	20	10	ST+
		32	VST+
PRT3_TT_DCE-	21	24	ST-
		31	VST-
PRT3_TT_DTE+	47	12	TT+
		40	VTT+
PRT3_TT_DTE-	46	26	TT-
		39	VTT-
PORT3_DTR+	55	8	DTR+
PORT3_DTR-	56	22	DTR-

(continued)

**Table A-4. Signal and Pin Assignments for Port 3** *(continued)*

120-pin QSerial Connector		44 Pin Conn Port 3	
Signal	Pin	Pin	Signal
PORT3_DSR+	53	6	DSR+
PORT3_DSR-	52	20	DSR-
PORT3_DCD+	57	9	DCD+
PORT3_DCD-	58	23	DCD-
PORT3_RTS+	28	4	RTS+
PORT3_RTS-	30	18	RTS-
PORT3_CTS+	26	5	CTS+
PORT3_CTS-	27	19	CTS-
PORT3_CMD	59	27	CMD
PRT3_MODE1	45	41	MODE1
PRT3_MODE2	22	42	MODE2
PRT3_MODE3	51	21	MODE3
SGND	54	44	SGND

Table A-5 shows the signal and pin assignment for Port 4.

**Table A-5. Signal and Pin Assignments for Port 4**

120-pin QSerial Connector		44 Pin Conn Port 4	
Signal	Pin	Pin	Signal
FGND	120	1	FGND
PORT4_TXD+	84	2	SD+
		38	VSD+
PORT4_TXD-	83	16	SD-
		36	VSD-
PORT4_RXD+	109	3	RD+
		37	VRD+
PORT4_RXD-	110	17	RD-
		35	VRD-
SGND	79	7	SGND
SGND	85		
SGND	89	43	SGND
SGND	108		
PORT4_RT+	78	11	RT+
		34	VRT+
PORT4_RT-	77	25	RT-
		33	VRT-
PRT4_TT_DCE+	80	10	ST+
		32	VST+
PRT4_TT_DCE-	81	24	ST-
		31	VST-
PRT4_TT_DTE+	107	12	TT+
		40	VTT+
PRT4_TT_DTE-	106	26	TT-
		39	VTT-
PORT4_DTR+	115	8	DTR+
PORT4_DTR-	116	22	DTR-

*(continued)*

**Table A-5. Signal and Pin Assignments for Port 4** *(continued)*

120-pin QSerial Connector		44 Pin Conn Port 4	
Signal	Pin	Pin	Signal
PORT4_DSR+	113	6	DSR+
PORT4_DSR-	112	20	DSR-
PORT4_DCD+	117	9	DCD+
PORT4_DCD-	118	23	DCD-
PORT4_RTS+	88	4	RTS+
PORT4_RTS-	90	18	RTS-
PORT4_CTS+	86	5	CTS+
PORT4_CTS-	87	19	CTS-
PORT4_CMD	119	27	CMD
PRT4_MODE1	105	41	MODE1
PRT4_MODE2	82	42	MODE2
PRT4_MODE3	111	21	MODE3
SGND	114	44	SGND